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(56) Documents cited
GB 2197109 A GB 2059077 A EP 0215600 A
EP 0143550 A EP 0033525 A US 4445788 A
US 3568627 A

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(54) Indicating devices for plants

(57) The invention concerns indicating devices for use with plants for indicating whether or not a plant is being subjected to the correct conditions of temperature and/or moisture. A device 12 carrying instructions 13 concerning the type of plant for which it is suitable is printed with an enclosed volume of liquid crystal ink which has one colour at a suitable temperature for the plant and other colours when the temperature is too hot or too cold. The device also carries a strip 16 of material which changes colour according to the moisture level of the soil in which it is inserted to give an indication when the soil is too dry. Alternatively an electronic circuit and probe may measure the moisture level, and provide an audible alarm. The device may also measure the amount of light received during a day.

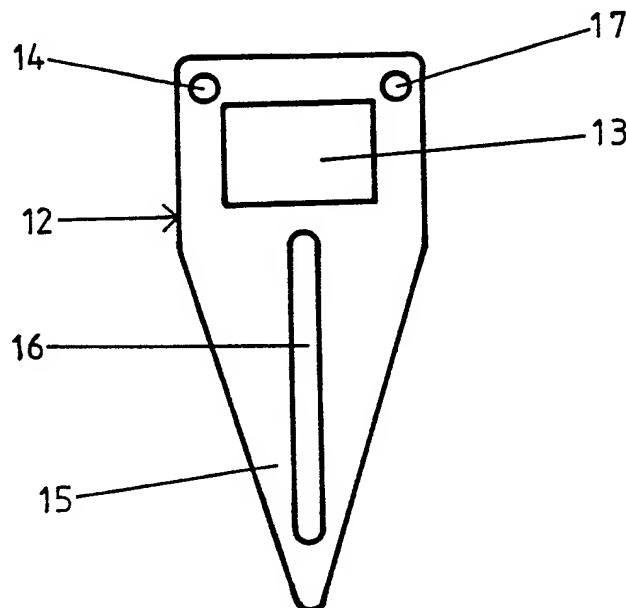


FIG. 1

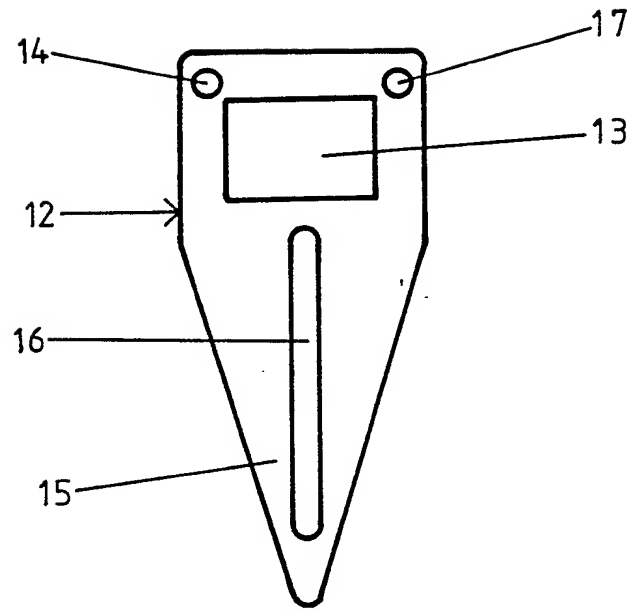


FIG. 1

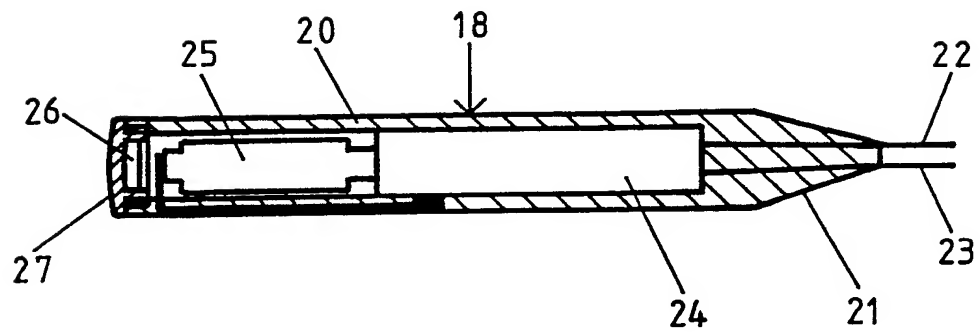


FIG. 2

INDICATING DEVICES

This invention relates to indicating devices for use with plants, for indicating whether or not a plant is being given the correct conditions for healthy growth.

Pot plants, particularly those kept indoors, have different requirements from one another for their healthy growth particularly in terms of the temperature and moisture they require. If they are kept at a temperature which is too hot or cold or the soil is kept too wet or dry, while they may not die, they will fail to grow or flower as they should and often the owner will not understand why.

An object of this invention is to provide an indicating device for use with a plant, designed to indicate when the conditions are unsuitable for the plant to thrive.

Accordingly in one aspect the invention provides an indicating device adapted to be associated with a plant so that it is subjected to substantially the same conditions as the plant and arranged to give an indication when the moisture level and/or temperature to which the plant is subjected is unsuitable.

In one form the device is a label or tag printed with information concerning the type and/or care instructions for the plant (and preferably the name and a picture of the plant) and additionally includes an enclosed volume of a material, such as liquid crystal ink, which changes colour according to temperature. The particular material for each plant type is with advantage chosen to give one colour for suitable temperature, another for a temperature which is too cold and another for a temperature which is too hot.

In another form or additionally the device includes means for indicating the wrong moisture level in the soil. The device has a probe means for insertion in the soil around the plant and indicating means for indicating when the moisture level is unsuitable. This may include a water-sensitive chemical material which changes colour or gives

some other indication or preferably is in the form of an electronic circuit powered by a battery and is arranged to give an audio or visual indication if the soil has reached a moisture level where the plant should receive more water. The indicator could also indicate if the moisture level is too high but this is not essential if the indication is given before the moisture level becomes unhealthy and the instructions are to water only when the indicator says so.

With these indicating devices a plant grower can subject each individual plant to the required conditions for its healthy growth.

A material may also be included on the indicating device which changes colour according to the amount of light absorbed during the day. This could provide an indication of whether the plant is receiving too much or too little sunlight.

Two embodiments of indicating devices will now be described by way of example only with reference to the accompanying drawings which show diagrammatic views of the devices.

Figure 1 shows a tag or label 12 of plastics material, such as PVC, having a panel 13 printed with a picture of a particular plant and care instructions for that plant. A heat sensitive material 14, such as a liquid crystal ink, is encapsulated in a transparent material attached at the top of the label. For example the label may be white and the heat sensitive area consist of a printed panel of black overprinted with the liquid crystal encapsulated ink. A variety of liquid crystal inks are readily available which change colour according to temperature in the range in and around that suitable for plant growth. For example for a particular plant a suitable temperature range may be 12-21°C and an ink is chosen which will be green within this range, blue at a higher temperature and red at a colder temperature.

The lower end 15 of the tag 12 is tapered for easy insertion into the soil around a plant so that the tag will

be subjected to approximately the same light, moisture and temperature conditions as the plant. The lower part of the label/tag may include a material sensitive to moisture conditions which changes colour according to the moisture conditions and thus gives an indication when the soil around the plant is too wet or dry. A strip of such material is indicated at 16.

A further indicating means could be included on the label at 17. This comprises a material sensitive to the amount of light received during a day and arranged to give a signal if the amount of light is too little or too great for the particular plant.

Figure 2 shows an alternative device 18 for measuring the moisture content of the soil around a plant. The device comprises a circular sectioned elongate casing 20 tapering at its bottom end 21 from which extends a probe having two conductive prongs 22, 23. The casing houses an electronic circuit 24 powered by a battery 25 and a visual or audio indicating means 26 located below screw cap 27. In the case of a visual indicating device this will be viewable through the cap.

In use the probe is placed into the soil of a household plant pot so that the probe extends to the level of the roots where the moisture is most relevant. The electronic circuitry is designed to measure the level of resistance of the soil between the two contacts on the probe. As the soil dries out the resistance between the two contacts increases. When the level of resistance increases past a predetermined level, determined by the moisture required by a particular plant, the electronic circuit detects this level and activates an intermittent audio warning or turns on a visual indicator such as a light. When water is added to the soil (normal watering of a plant) the resistance level decreases. When the level of resistance between the two contacts of the probe decreases past the predetermined level, the electronic circuit detects such change and de-activates the warning device. The exterior of the casing is printed with

instructions on plant care. Different such devices, set to different levels of resistance before a warning is given, will be sold for different ranges of plants and the exterior of the casing will be printed with care instructions and indications as to which plants it is suitable for.

CLAIMS

1 An indicating device adapted to be associated with a plant so that it is subjected to substantially the same conditions as the plant and arranged to give an indication when the moisture level and/or temperature to which the plant is subjected is unsuitable.

2 An indicating device in the form of a label/tag printed with information concerning a type of plant and care instructions for the plant and including an enclosed volume of material which changes colour according to temperature, the material showing one colour for the range of temperatures suitable for the plant and at least one other colour for temperatures outside that range.

3 An indicating device according to claim 2 in which the material is a liquid crystal ink.

4 A set of indicating devices, each according to claim 2 or claim 3 including different materials changing colours in different ranges for use with different plant types.

5 An indicating device or set of indicating devices according to any of claims 2 to 4 including means responsive to the level of moisture and arranged to give an indication when the moisture level is incorrect for a particular type of plant.

6 An indicating device or set of indicating devices according to claim 5 in which the means for measuring the moisture includes an electronic circuit and probe means for insertion in the soil containing a plant and in which the electronic circuit is arranged to measure the electrical resistance of the soil.

7 A device or set of devices according to any of claims 1 to 6 including means for measuring the level of light received by the device during a day and to give an indication if this level is incorrect for the associated plant.

8 An indicating device comprising an elongate casing containing an electronic circuit and battery power means, a

probe extending from the casing for insertion in the soil around a plant, the circuit being arranged to measure the electrical resistance of the soil and to activate a visual or audio warning means when the resistance rises above a predetermined level.

9 An indicating device according to claim 8 in which the casing is printed with information concerning the type of plant for which the device is suitable.

10 An indicating device according to claim 9 in which the casing additionally carries an enclosed volume of a material which changes colour according to temperature and which is arranged to remain at one colour for the temperature range suitable for the plant type.

11 A set of devices according to any of claims 8 to 10 suitable for different plant types.

12 An indicating device for use with plants substantially as described herein with reference to or as illustrated in Figure 1 or Figure 2 of the accompanying drawings.